2.5-2.8 Unit Outline

Name _____ **Period** _____ **Date** _____

Learning Target	Assessment	M.L.4	M.L.3	M.L.2	M.L.1
1. I can use long division & synthetic division to simplify a rational expression.	2.5 WS 2.5 & 2.6 Quiz 2.5-2.8 Review 2.5-2.8 Test				
2. I can find the zeros of a polynomial function in factored form.	2.6 WS 2.5 & 2.6 Quiz 2.5-2.8 Review 2.5-2.8 Test				
3. I can factor a polynomial function to find the zeros.	2.6 WS 2.5 & 2.6 Quiz 2.5-2.8 Review 2.5-2.8 Test				
4. I can use the rational zeros theorem to write a list of possible rational zeros of a polynomial function.	2.7 WS 2.7-2.8 Quiz 2.5-2.8 Review 2.5-2.8 Test				
5. I can use Descartes's Rule of Signs to determine the number of possible positive and negative real zeros of a polynomial.	2.7 WS 2.7-2.8 Quiz 2.5-2.8 Review 2.5-2.8 Test				
6. I can write a polynomial function when given the zeros of the function.	2.8 WS 2.7-2.8 Quiz 2.5-2.8 Review 2.5-2.8 Test				
7. I can graph and/or identify a graph of a polynomial function, given the zeros and their multiplicity.	2.8 WS 2.7-2.8 Quiz 2.5-2.8 Review 2.5-2.8 Test				
8. I can find all complex zeros of a polynomial function and write it in factored form.	2.8 WS 2.7-2.8 Quiz 2.5-2.8 Review 2.5-2.8 Test				

Long Division

$$3x+4\overline{)\,27x^3+0x^2+0x+64}$$

$$9x^2-12x+16$$

$$-(27x^3+36x^2)$$

$$-36x^2+0x+64$$

$$-(-36x^2-48x)$$

$$48x+64$$

$$-(48x+64)$$

$$0$$

Ex. Apply Descartes's Rule of Signs to

f(x) = $2x^4 + 7x^3 - 4x^2 - 27x - 18$

How many sign variations are there in f(x)?

Only one sign change, so f must have exactly one positive real zero.

How about f(-x)

f(-x) = $2x^4 - 7x^3 - 4x^2 + 27x - 18$

3 variations in sign means f has either 3 or 1 negative real zeros.

Synthetic Division

$$(2x^4-3x^2+4x-9)\div(x+2)$$

-2	2	0	-3	4	-9
		-4	8	-10	12
	2	-4	5	-6	3

$$(2x^4-3x^2+4x-9)\div(x+2)=2x^3-4x^2+5x-6+\frac{3}{x+2}$$